



Determining Number of Wells and Preparing a Potential Map

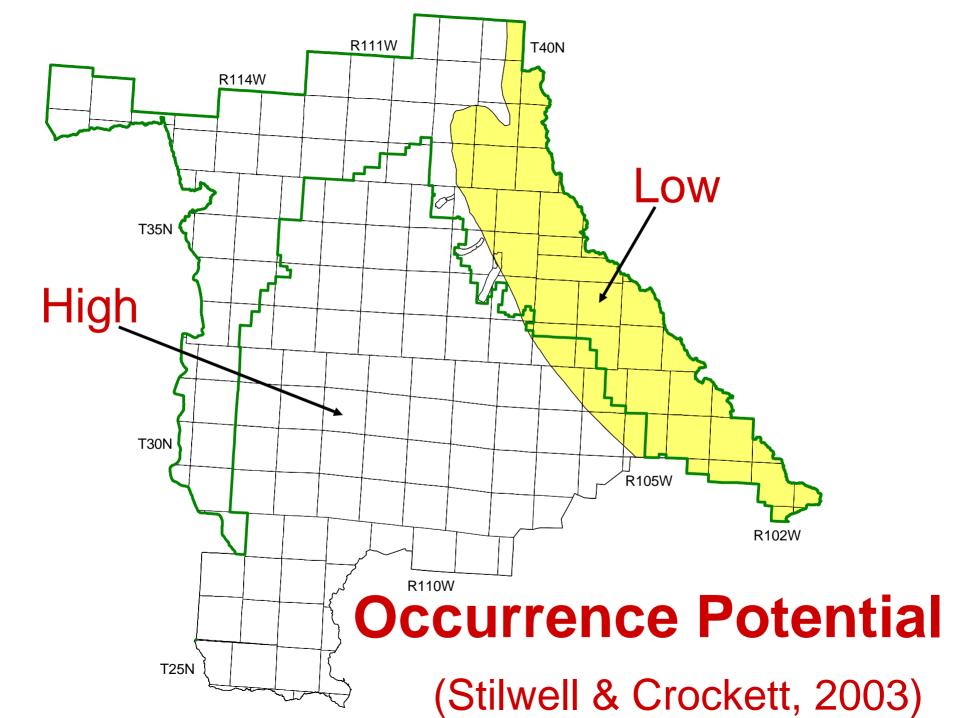
Salt Lake seeps (1938)

Our Wyoming Planning Years 1984-2004

In the beginning: (circa 1984-88)

informal industry survey + professional experience =

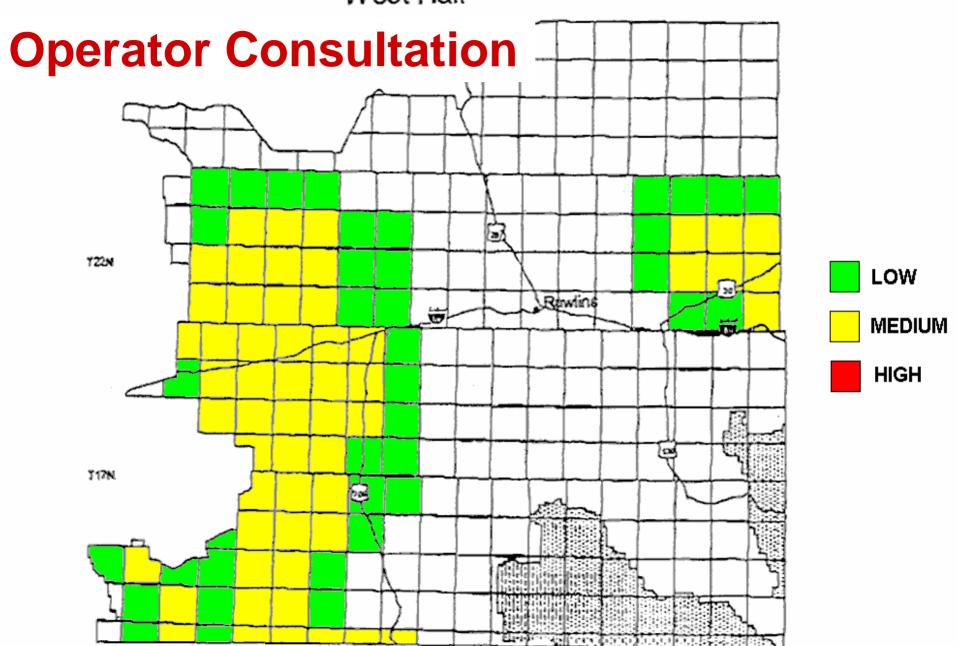


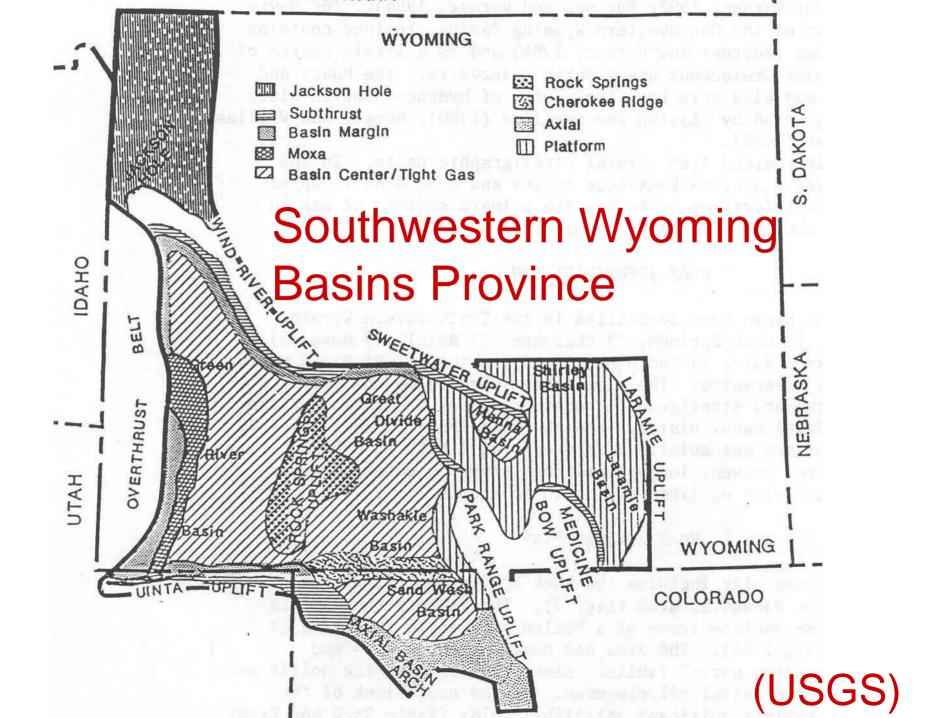


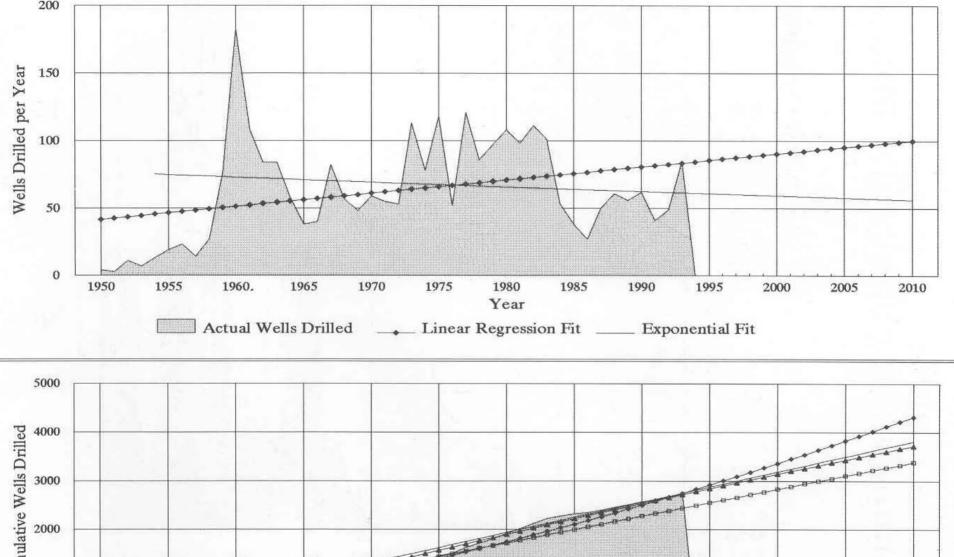
The early years: (circa 1989-95)

formal industry survey +
professional experience +
industry phone calls +
USGS assessments +
statistical analysis =

Rawlins Field Office Resource Management Plan Area of Study West Half







Cumulative Wells Drilled Year Linear Regression Fit Exponential Fit (Stilwell, 1990) Actual Wells Drilled **DCMODE**

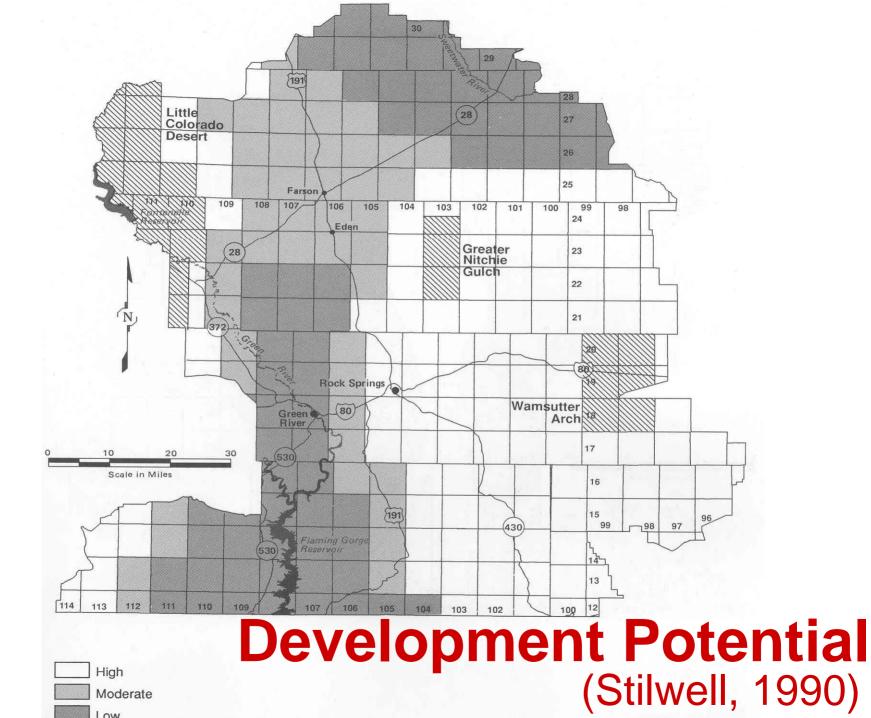
GREEN RIVER RESOURCE AREA

WELLS DRILLED PER YEAR

FUTURE PROJECTIONS

(Based on Wells Drilled between 1950-1993) (Stilwell, 1990)

Year	Linear Regression Y = 0.97385483X - 1857.4321		Exponential Curve Y = EXP(-0.00517973X) x (1.86856 E06)		DCMODE 61 wells/yr	J(Ø) 73 wells/yr
	Wells/yr	Cumulative	Wells/yr	Cumulative	Cumulative	Cumulative
1994	84	84	61	61	56	63
1995	85	170	61	122	111	125
1996	86	256	60	182	167	188
1997	87	344	60	242	222	250
1998	88	432	60	302	278	313
1999	89	521	60	362	333	375
2000	90	611	59	421	389	438
2001	91	703	59	480	444	500
2002	92	795	59	539	500	563
2003	93	888	58	597	555	625
2004	94	982	58	655	611	688
2005	95	1,077	58	713	666	750
2006	96	1,174	57	770	722	813
2007	97	1,271	57	827	777	875
2008	98	1,369	57	884	833	938
2009	99	1,468	57	940	888	1,000
2010	100	1,568	56	997	944	1,063



The middle years: (circa 1996-2000)

formal industry survey + professional experience + industry phone calls + new USGS assessments + better statistical analysis + reservoir analysis =

Jack Morrow Hills: Fort Union Coalbed Gas 1 TCFG mean undiscovered resource (Stilwell, 1999)

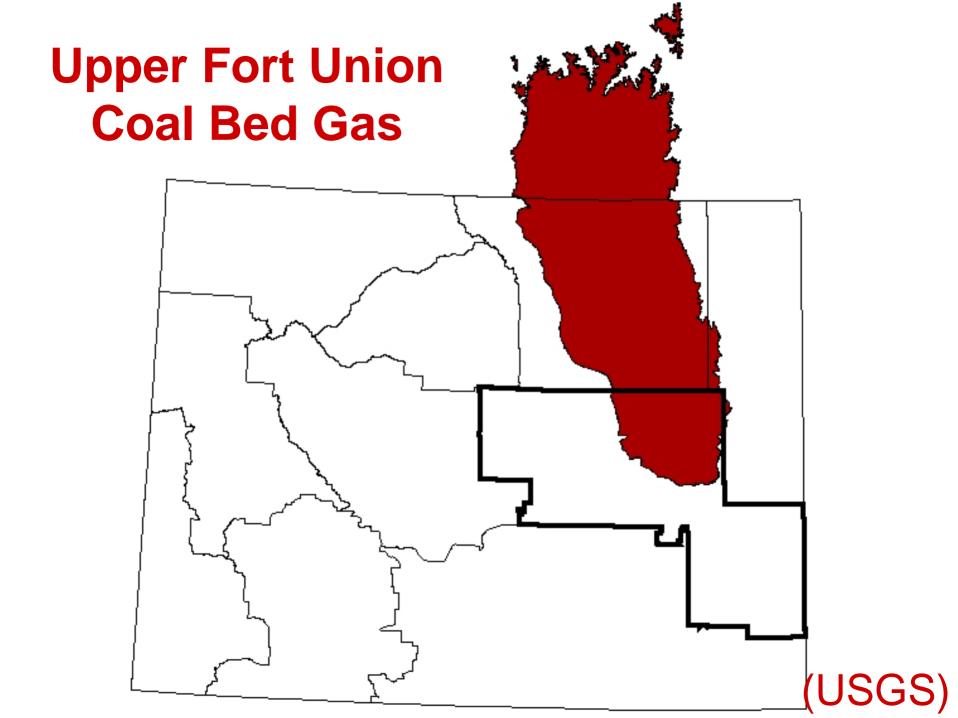
"Checkerboard Method"

Estimating undiscovered accumulations in sparsely drilled areas.

U.S.G.S. Bulletin 2120 1995

Success ratio = 45/45+91 = 0.33

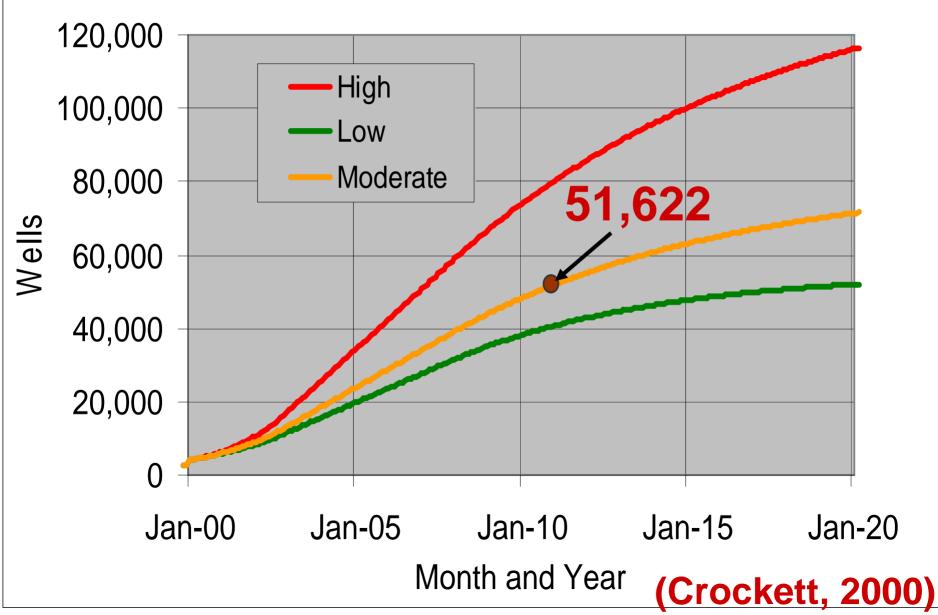
New accumulations = $0.33 \times 1088 = 359$ (Stilwell, 1999)

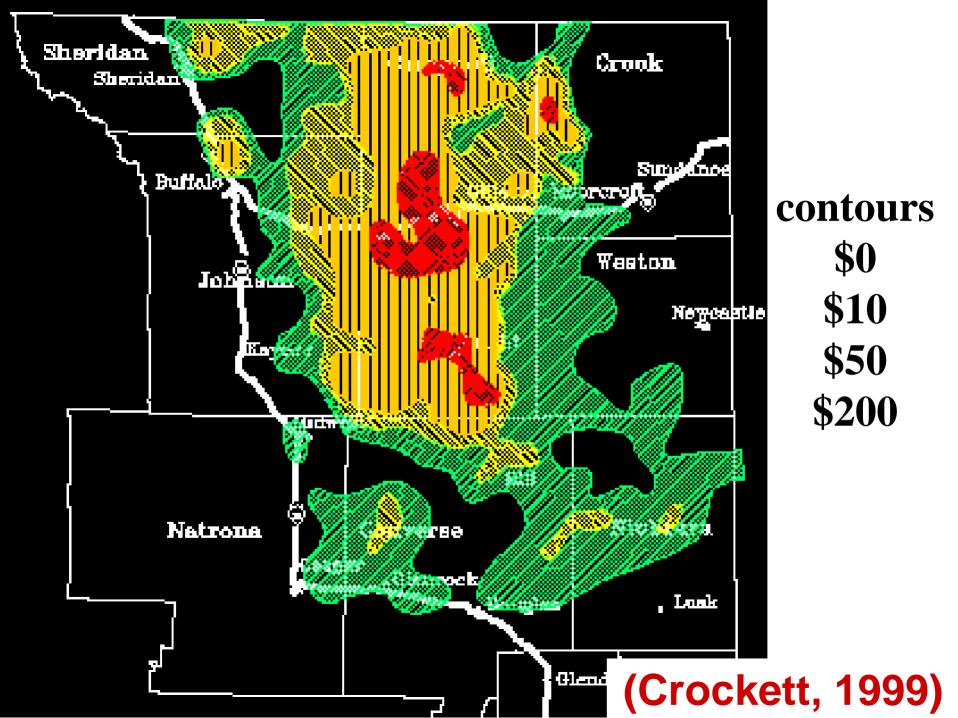


Powder River Basin CBM data, calculations, and assumptions

- Coal thickness cutoff: 20 feet
- Total coal: 1.01 trillion short tons
- Ave. synthesized adsorption isotherm
- Estimated underpressuring
- Gas content calculated
- Total recoverable gas: 28 TCF

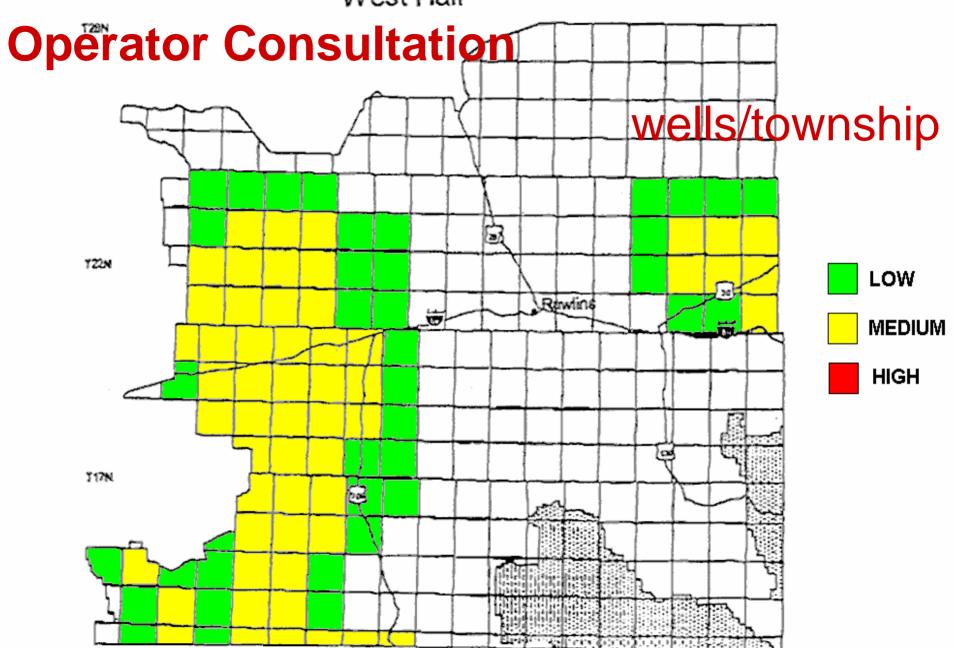






The mature years: (circa 2001-2004) formal industry survey + professional experience + industry phone calls + newest USGS assessments + other statistical analyses + reservoir analysis + other assessments + state survey consultation =

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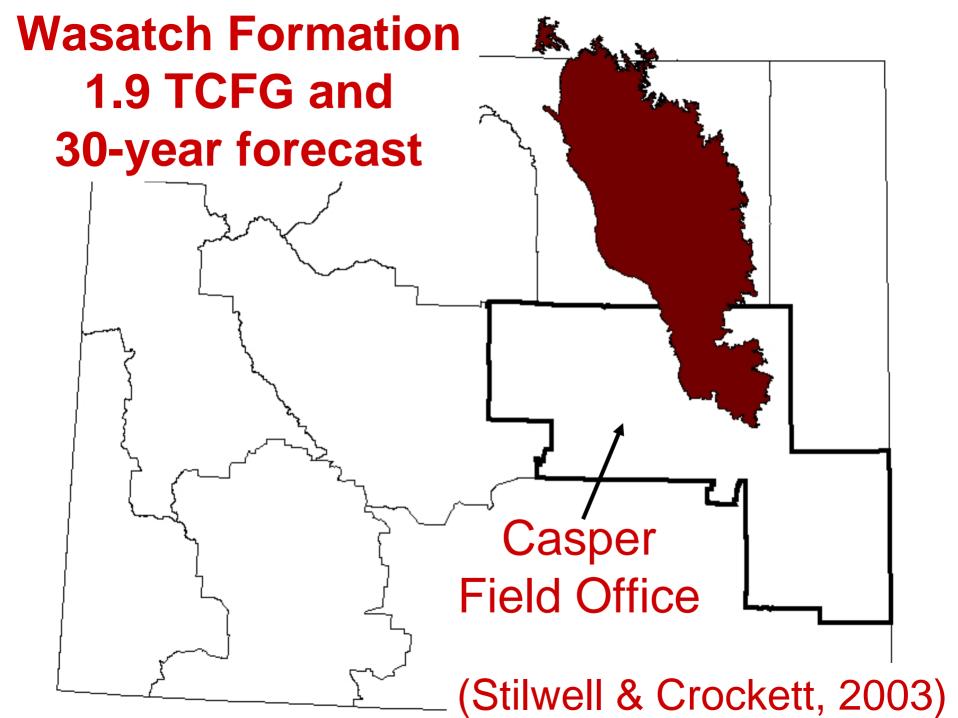


Resource Assessment Types

- In-place estimates
- Proved reserves
- Undiscovered resources

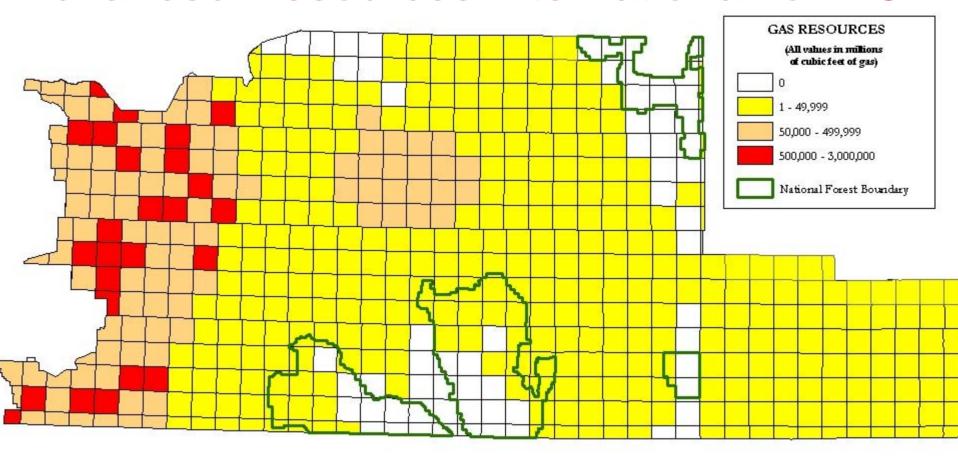
Resource Assessment Work

- US Geological Survey
- Department Of Energy funded
- Energy Information Agency
- Potential Gas Committee
- National Petroleum Council
- EPCA Study
- State Survey



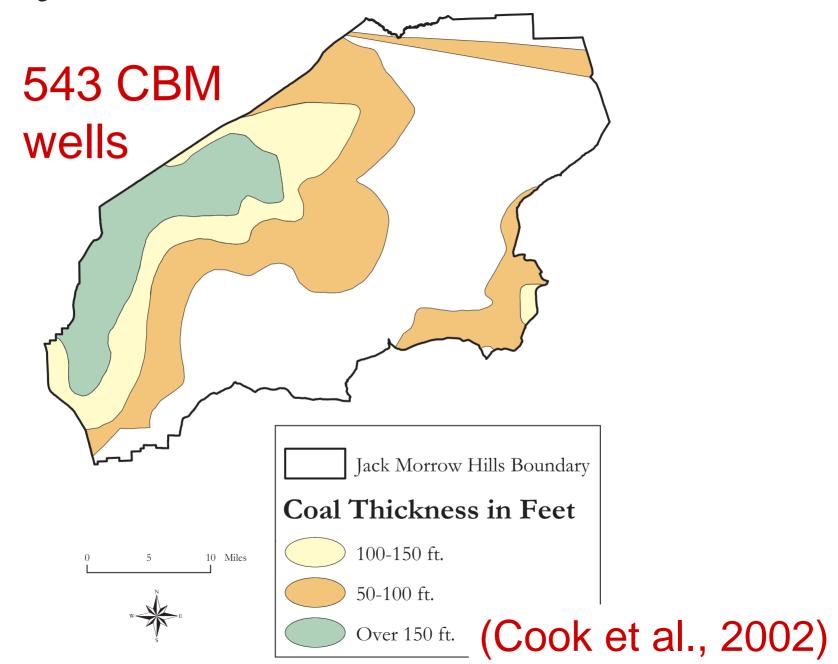
Rawlins Field Office

Advanced Resources International for DOE

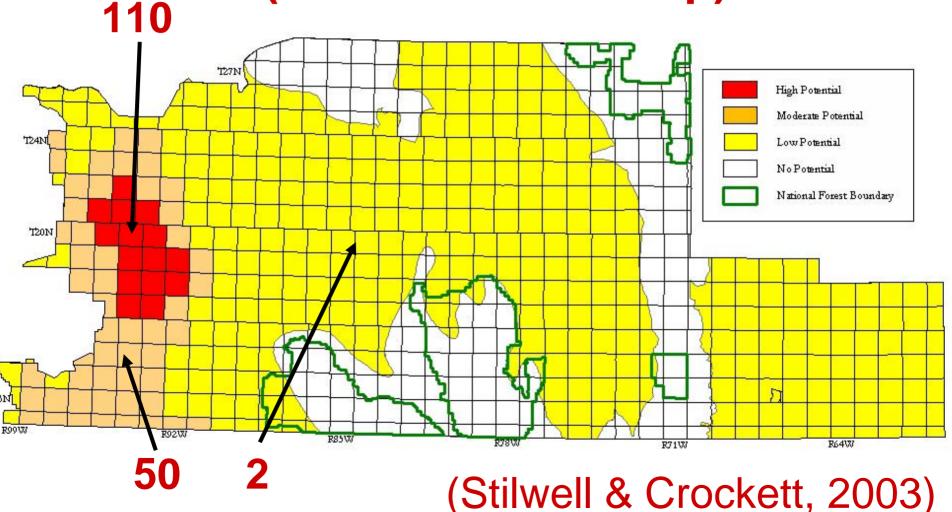


(Stilwell & Crockett, 2003)

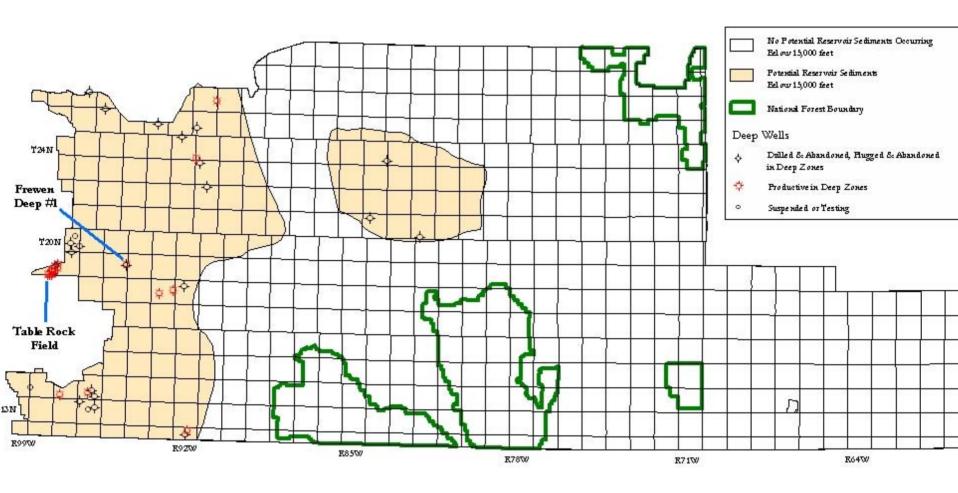
JACK MORROW HILLS



Rawlins Field Office Development Potential (locations/township)



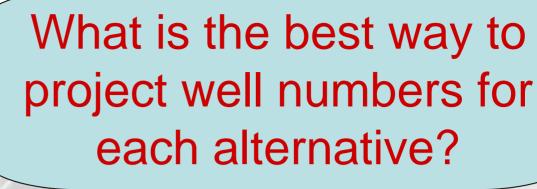
Rawlins Field Office Deep Well Occurrence Potential

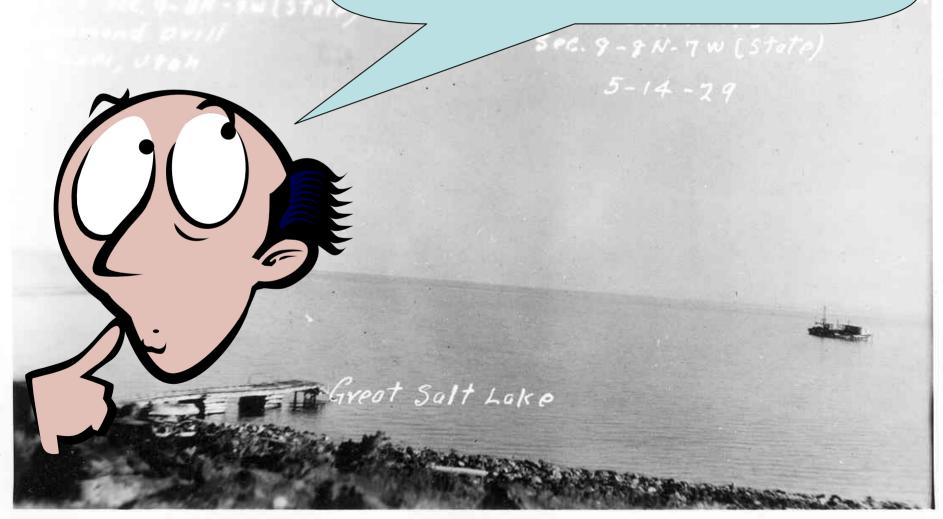


(Stilwell & Crockett, 2003)

Our base-line projections of future wells and our potential maps are starting to look pretty good; but









Bloomington Dome, Utah (1931)



Premature explosion of 750 lbs. of gelatin.